
# Orange-fleshed sweetpotato (OFSP) puree for fried and baked products in Kenya, Uganda, and Malawi project

## 2019-2020

## Workplan review meeting

CIP INTERNATIONAL POTATO CENTER

CGIAR RESEARCH PROGRAM ON Roots, Tubers and Bananas

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November 2019

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# Acronyms

| | |
|---|---|
| AFA | Agriculture and Food Authority |
| CIP | International Potato Center |
| CRS | Catholic Relief Services |
| EIL | Euro-Ingredients Ltd |
| FANEL | Food and Nutritional Evaluation Laboratory |
| FCI | Farm Concern International |
| GAIN | Global Alliance for Improved Nutrition |
| GAP | Good agronomic practices |
| MESPT | Micro Enterprises Support Programme Trust |
| MoA | Ministry of Agriculture |
| MoH | Ministry of Health |
| OFSP | Orange-fleshed sweetpotato |
| RTB | CGIAR Research Program on Roots, Tubers and Bananas |
| RULIMP | Rural Livelihoods Improvement International |
| SMEs | Small and medium-sized enterprises |
| SSU | Shamba Shape Up |
| WFP | World Food Programme |

# Executive summary

The Orange-fleshed sweetpotato (OFSP) puree for fried and baked products in Kenya, Uganda, and Malawi project is being implemented under the auspices of the CGIAR Research Program Roots, Tubers and Bananas (RTB) scaling fund. On 30 October 2019, the project held its 2019/2020 work plan review meeting at the International Livestock Research Institute in Kenya. The participants came from various sectors, including government, private sector, food processors and non-profit organizations (Table 1). The objective of the meeting was to bring together all the stakeholders along the sweetpotato value chain for networking, identifying areas of synergy and collaboration, and reviewing the project work plan. The implementing partners—Euro-Ingredients Ltd (EIL), Organi Ltd, Mediae Ltd and Shamba Shape Up (SSU)—presented their work plans covering outputs under the project. These presentations cut across the whole value chain from the seed system to processing and advocacy. This was followed by group discussions where participants broke into three different groups—seed systems, processing and advocacy—to identify points of convergence. Each group gave feedback on the existing gaps, solutions and which partners to help bridge the gaps. The NGO partners all were able to pitch their activities, how they address the gaps, and identify areas of collaboration. The private sector participants identified opportunities and areas of collaborative engagement with other partners and the scaling project. From the government side, Leila Odhiambo, the program manager for nutrition-sensitive and institutional linkages, shared the status of nutrition-sensitive agriculture in Kenya. She called on all stakeholders to work closely with the county and national governments for intervention to reach the target population in order to address malnutrition. Overall, participants appreciated the scaling readiness initiative that enabled organizations to identify who was doing what and where to avoid duplication. The meeting ended with participants undertaking a diagnostic survey to help identify scaling bottlenecks.

**Table 1.** Summary of organizations present

| Organization/projects | Private sector | Government |
|---|---|---|
| Catholic Relief Services/MWENDO | EIL–Nairobi | Agriculture and Food Authority |
| International Potato Center (CIP)/ Technologies for African Agricultural Transformation | Organi Ltd–Homa Bay | Ministry of Health—Nutrition and Dietetics Director Ministry of Agriculture National government |
| World Vision | Hequendo Cooperative–Bungoma | Agri-Nutrition department |
| Farm Concern International | Kabondo Sweetpotato Cooperative Society | University of Nairobi |
| World Food Programme | Agro-Foods Ltd–Kisumu | **Other partners** |
| CIP–Food and Nutritional Evaluation Laboratory | Rural Livelihoods Improvement International–Ahero | RTI International- USAID Kenya Crops and Dairy Market System project (KCDMS) |
| Self Help Africa | Mediae Company–SSU | Concern Worldwide–Lishe poa project |
| Global Alliance for Improved Nutrition–International | Barnet Farms–Siaya | NetBiz Impact—Implementing partner |
| GIZ/Green Innovation Program | Micro Enterprises Support Programme Trust–Eastern Kenya | Kenya Agricultural and livestock research organization (KALRO) |
| CIP/RTB scaling project | | |

# 1. Introduction

Orange-fleshed sweetpotato (OFSP) is one of the biofortified crops that is highly nutritious and rich in vitamin A. Its low cost of production and high yielding nature makes it a compelling avenue to address vitamin A deficiency, food insecurity and income generation through value chain commercialization. However, the seasonality of OFSP roots due to rainfed production has meant that roots and, therefore, OFSP products are only available for a few months within the year. OFSP puree processing and utilization is one of the avenues to address the OFSP commercialization challenge, making products available all year round. In Kenya, there is an increase in demand for OFSP roots and seed vines as a result of expanded markets brought about through puree processing, thereby creating employment and income opportunities along the value chain. OFSP puree has the potential for wider application with its products accessible to both formal and informal markets.

The CGIAR Research Program on Roots, Tubers and Bananas (RTB) funded the International Potato Center (CIP) with a scaling grants to accelerate the use of OFSP puree in Kenya, Malawi and Uganda. The two-year (2019–21) project targets both formal (processors) and informal (street vendors) sectors with OFSP puree as a major ingredient to reduce the use of wheat flour and to enrich the products with vitamin A.

The objectives of the project are to:

- Ensure reliable and consistent supply of good quality fresh OFSP roots for puree processing.
- Increase production and use of OFSP puree in Kenya, Malawi and Uganda.
- Increase awareness of the nutritional benefits of OFSP among farmers and consumers.
- Increase awareness of the economic benefits of OFSP among producers and processors

For these objectives to be achieved, there is a need for functional seed systems where farmers have access to not only right but good quality OFSP varieties, extension services for good agronomic practices (GAP), organized root production, puree processing technologies, access to credit facilities, and awareness of OFSP benefits and products. This cannot be achieved in isolation. The project has sought to collaborate with several partners (private and public) for successful and sustainable project implementation. This meeting, therefore, was crucial in linking the project with ongoing initiatives within the country, as well as aligning workplans with specific partners as we seek to surmount existing bottlenecks to scaling up OFSP value chains in Kenya.

The purpose of this meeting was to: create awareness and allow participants to understand the objectives and implementation modalities, engage the stakeholders and brainstorm on the best implementation strategies for scaling up the value chain, identify synergies and opportunities for collaboration among various stakeholder organizations and existing initiatives, identify key bottlenecks to production and utilization of OFSP and OFSP puree as a functional food ingredient.

Through this meeting, partners were able to complete diagnostic surveys under the scaling readiness to help identify the bottlenecks along the value chain.

## **Session 1:** Introduction and welcoming remarks

At the beginning of the meeting, Rose Chesoli welcomed participants and shared the meeting objectives and expected outcomes with them. Participants introduced themselves and wrote down their expectations for the meeting. Thirty participants (13 women, 17 men) from 20 organizations (e.g. government, private sector food processors, NGOs, etc.) attended. The objective of the meeting was to review work plans for project implementation. The program for the meeting is found in Annex 1.

We summarize the meeting presentations and discussions in the following sections.

### **Presentation 1:** Overview of the OFSP puree for baked and fried products in Kenya, Uganda, and Malawi

George Abong gave an overview of the project (Photo 1) and highlighted opportunities available in the utilization of OFSP puree in the baking and hospitality industry. In East Africa, Kenya is a net importer of wheat, producing below 500,000 tons (t) against an annual consumption of 1 million tons costing USD 356 million a year. In southern Africa, Malawi imports 99% of its wheat for flour-based products at a cost of USD 65 million a year. Research by CIP–SSA (sub-Saharan Africa) showed that OFSP puree can replace up to 50% of wheat flour requirements in baking bread, with potentially huge economic and health impacts for Africa.


**Photo 1.** George Abongo sharing an overview of the project. Credit Nathan Rono, CIP.

Abong shared that the project is interested in OFSP puree over flour because of the immediate economic interest in the bakery sector as a wheat substitute. OFSP puree has high vitamin A retention unlike sweetpotato flour, which loses much of its vitamin A during the drying process. (The ratio of OFSP puree conversion was reported as 1.3 kg, OFSP roots produce 1 kg [1.3:1].) OFSP puree as an intermediate product offers a platform for further innovation, thus multiplying economics benefits**.**

The project's implementation plan involves demand creation activities, technology demonstrations, partnerships, technology transfer, advocacy, and policy and capacity development in collaboration with other CIP projects, the private sector and NGOs. He shared that the project aims to contribute to:

- Establishment of an OFSP seed system and providing GAP training.
- Establishment of OFSP fresh roots for both processing and the fresh root market.
- Demonstration of the need for dietary diversification to address malnutrition and over-nutrition.
- Urbanization and evolving urban food systems.
- Addressing unemployment, gender disparities, and social exclusion.
- Formulating government policies on agro-processing.

The following challenges to project implementation were highlighted:

- Shortage of technologies for improved processing and storage of both puree and roots.
- Supply chain management—there is no organized sweetpotato production or collective marketing.
- Quality control starts with using clean planting materials and applying GAP. This is a challenge as many roots go to waste due to processor's food safety and standards.
- Scalability can affect impact and reach of project outcomes.
- New commercial partnerships—there are few partners involved in OFSP puree processing.
- Developing standards for biofortified varieties and products.
- Financing for agro-processing for small and medium-sized enterprises (SMEs). At present there are no financial institutions or organizations giving credit facilities to OFSP farmers or processors to expand their businesses.
- OFSP is a seasonal crop and planned production is key to limit farmer losses due to climate change, drought in particular.

## **Presentation 2:** Progress on scaling readiness approach under OFSP value chain

Rose Chesoli talked about the RTB scaling readiness strategy under the project (Photo 2). She highlighted the increasing need for safe and nutritious foods for which organizations, firms, and individuals have developed innovations to meet increasing needs. There are, however, challenges in scaling up the use of these innovations.

The scaling readiness strategy is a stepwise approach developed by CGIAR that supports research-for- development organizations in designing, implementing, and monitoring of a scaling strategy (Fig. 1). This approach supports evidence-based decision making and learning through a rigorous process of data collection and analysis.


**Photo 2.** Rose Chesoli speaking about the project's scaling readiness strategy . Photo credit CIP/Nathan Ronoh

Scaling readiness provides learning tools that help organizations:

- Understand their innovation in a comprehensive way.
- Identify bottlenecks and opportunities for scaling the innovation in a specific context.
- Develop strategies to overcome scaling bottlenecks.
- Choose relevant partners and partner engagement models for effective scaling of innovation
- Monitor whether their innovation becomes more ready for scaling over time.
- Fosters their team's learning and capacity development on scaling.

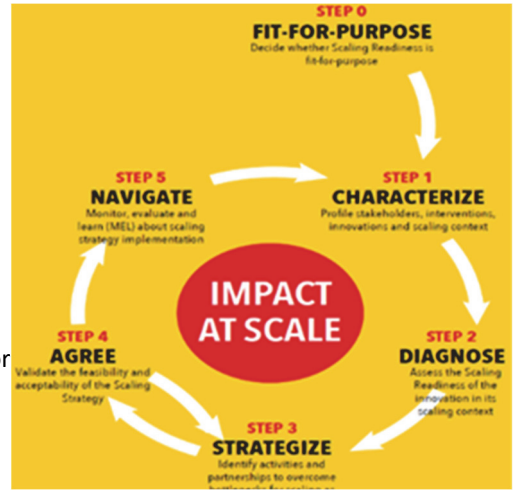


**Figure 1.** Schematic of the scaling readiness strategy.

The scaling readiness strategy comprises five stages, presented below.

**Stage 1: OFSP puree project innovation characterization.** This involves 'unpacking' the innovations, redefining the objectives and scope of work, and providing a clear understanding of the core innovation to be taken to scale. In this project the core innovation was shared as the 'use of OFSP puree in baked and fried products.' For OFSP puree to go to scale, several factors, referred to as complementary innovations, need to be in place. Innovation characterization helps identify all complementary innovations required for core innovations to go to scale: What exists? What are the alternatives, for and by whom? Table 2 shows the innovation profile for the project as developed by during initial stakeholders meeting on 30 May 2019.

**Table 2.** Innovation profile

| Innovation | Outputs | | | Value chain level | Innovation function | Who is doing it? |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | | | |
| 1. Contract farming for provision of disease and pest-free seeds and vines | 2. Large scale (nuclear) OFSP seed multiplication center for disease and pest- free seed production | 4. Quality declared planting material law on commercial vine multiplication | 6. Providing incentives/ subsidies to commercial vine producers | Planting material | Accessibility (Affordability) | KALRO, CIP, FCI, Organi Ltd, Processors |
| 2. Processing-friendly OFSP varieties for production by commercial farmers in Kenya | 8. List of processing- friendly OFSP varieties that can be released quickly in Kenya for commercial OFSP production | List of existing OFSP varieties suitable for different climatic areas | | Planting material | Accessibility (Availability) | KALRO, KEPHIS |
| 3.Delivery of extension services | 5. Training of commercial vine producers on vine multiplication and positive selection | 7. Upgrade module on disease- and pest- free OFSP production for mobile extension application | 22. Commercial OFSP farmer clusters | Planting material | Accessibility (Availability) | Ministry of Agriculture, CIP, FCI, |
| 9. Climate-controlled storage for OFSP roots | Not achievable in this project due to expense | | | OFSP roots | Accessibility (Availability) | CIP- in Uganda |

| Innovation | Outputs | | | Value chain level | Innovation function | Who is doing it? |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | | | |
| 4. Cold chain for OFSP puree for sales and shelves for shelf-stable puree | 12. Shelves for storing puree before sales to wholesalers and retailers | | | OFSP puree | Accessibility (Availability) | Euro-Ingredients Ltd (EIL) |
| 5. OFSP puree processing technologies-equipment for independent processor | 14. OFSP Puree packaging equipment | | | OFSP puree | Capacity to use/ work (hardware) | EIL |
| 6. Demos of OFSP puree-processing and packaging equipment | 21.Training workshop on OFSP puree business | 16. Guidelines on procedures of puree making | 10. Temporary holding areas for OFSP fresh roots in the processing facility | OFSP puree | Capacity to use/work (people) | CIP, EIL |
| 7. Credit access guide (manual) for OFSP producers | 17. Credibility assessment guidelines on OFSP production for banks | | | OFSP roots | Accessibility (Affordability) | Netbiz Impact, GAIN, RTI Self Help Africa |
| 8. Awareness campaign on benefits of OFSP | | | | OFSP bread or pastry | Motivation (Convince) | CIP, WV, RTI, CRS, |
| 9. OFSP puree business development guide (manual) | | | | OFSP puree | Capacity to use/work (people) | GAIN, SHA, RTI |

KALRO = Kenya Agricultural and Livestock Research Organization; FCI = Farm Concern International; KEPHIS = Kenya Plant Health Inspection Service; GAIN = Global Alliance for Improved Nutrition; RTI International ; Self Help Africa =SHA; WV = World Vision; CRS = Catholic Relief Services.

**Stage 2: The diagnosis stage.** This stage involves carrying out a diagnostic assessment survey to allow experts who understand the innovation and the scaling context to score the complementary innovations for readiness and identify some that needs more attention.

**Stage3: Strategize**. Once the bottlenecks have been identified, the team will devise an implementation strategy to the challenges to allow the innovation to go to scale. Chesoli explained that the project was at the second stage and encouraged participants to take part in the diagnostic survey in the session that followed.

**Stage 4:** Once the scaling strategy has been developed it need to be shared with partners and stakeholders to **validate** and have their **buy in** on how to address the scaling bottlenecks. When stakeholders reach consensus the strategy can be rolled out for implementations.

**Stage 5: Navigate**. At this state monitoring of the implementation plan and roll out of activities starts. Data collection for learning and review of the process to trigger going back to characterize stage.

## **Session 2:** Presentation of work plans by implementing partners

This session allowed the implementing partners (i.e. stakeholders who had received sub-grants from the project) to share what they do and how they will implement the scaling project. They shared work plans against the project outputs and complementary innovations, discussed in the following presentations.

### **Presentation 3:** Farmer aggregation market and linkage interventions for OFSP—FCI

Antony Masinde of Farm Concern International (FCI) outlined the company's strategy for scaling of puree in the regions where the interventions will be implemented. FCI works closely with farmers to increase utilization of OFSP in the informal/formal markets using a farmer mobilization and recruitment approach called the 'commercial village model' to promote farmer-based aggregation for delivery to informal markets. FCI intends to work with semi-commercial farmers investing in sweetpotato production through contract farming with processors. Masinde stated that FCI plans to identify commercial village trade facilitators to create a frontline strategy for implementing through business forums within the commercial villages and which will lead to increased incomes.

Masinde noted that FCI is raising public awareness by crafting consumer nutritional messages as part of nutrition forums and informal/formal market promotions. The organization also promotes the training of smallholder farmers to adopt bulking and commodity aggregation for increased efficiency in sourcing of roots. FCI intends to include semi-commercial smallholder farmers who are investors with modernized production systems. It will work on continuous consumer engagement to sustain demand for OFSP products and fresh roots in formal/informal outlets. Table 3 summarizes the activities FCI intends to undertake as part of the scalability project.

**Table 3.** FCI scalability summarized activities

| Activities | Description | Targets | Output | Q1 | Q2 | Q3 | Q4 |
|---|---|---|---|---|---|---|---|
| Carry out market profiling | Assess market viability for OFSP in 5 rural urban markets and 2 city wholesale markets. | 7 | Market profiling report | | | | |
| Select and train farmer groups and associations in high-potential areas for year-round production of preferred processing varieties. | Mobilize farmers into 10 commercial villages in 2 counties, organized around processors and informal market outlets. | 2,500 farmers | Farmer database | | | | |
| Link with processors and other extension services to support OFSP farmers for quality production and harvesting. | Build capacity in GAP and postharvest handling. | 100 groups | Training attendance list | | | | |
| Link farmers to informal wholesale/retail root market. | Hold producer-buyer linkage forums for negotiations, quality training, and postharvest handling. | 10 village business forums | Sales report | | | | |
| Organize OFSP farmers into outgrower networks | Link commercial villages to at least 2 processors. | 10 commercial villages as | 10 collection centers | | | | |

| Activities | Description | Targets | Output | Q1 | Q2 | Q3 | Q4 |
|---|---|---|---|---|---|---|---|
| linked to processors and set up collection centers. | | outgrower units | | | | | |
| Link OFSP puree-processing activities with government and counties. | Hold multi-stakeholder workshop on inclusive business model development for farmers, SMEs, and government agencies. | 3 workshops | Business model for fresh and processed products | | | | |
| Hold training workshops showcasing demand, recipes, products, production scales for OFSP puree and products, GAP, and postharvest handling. | Hold nutrition forums in 3 informal markets. | 3 fora | Forum proceedings | | | | |
| Organize and participate in agri-business forums, trade fairs, field days. and stakeholder engagements. | Host multi-stakeholder input fairs and trade fairs (e.g., seed, value-added products, inputs, agricultural mechanization, finance, etc.). | 2 | Report | | | | |
| Facilitate farmer access to financial services. | Promote commercial producer group savings and financial literacy in partnership with financial institutions. Distribute savings books. | 20% farmer saving | Value of savings | | | | |
| Build capacity of sweetpotato farmer linked to puree processors. | Support farmers on partnership agreement to supply processors. | 500 | Order documents | | | | |

**Reactions to the presentation**

*How does FCI assist farmers with access to market and which criteria does FCI use along the value chain? Where is the coordinating point along the value chain?*

FCI aims to ensure that local shops are able to stock OFSP products since the processers like Organi Ltd are growing slowly, hence absorption of roots is also slow. Pull and push strategy would strike a balance in demand creation. FCI targets fresh produce markets where it is working to formalize the informal market. It is working closely with farmers to link them to processors.

## **Presentation 4:** Puree technology and creating business development—EIL

This presentation was done by Antonio Magnaghi, EIL's chief executive officer. He highlighted the existing opportunities around the use of OFSP as an ingredient. For example, OFSP can be used as a puree for baked and fried products; in a juicer as a smoothie; in liquid concentrate; and for jams, spreads, sauces, gravies, juices, or even baby foods. OFSP roots can be used for chips and crisps. EIL is a private company that works in many countries, focusing on food processing. It makes dough and supplies to the informal and formal sector, and recently started a local franchise called Chapati Delight, which makes OFSP dough and chapati. Magnaghi noted that the informal sector is responding better as they like the soft texture, taste, and the color of the products. He observed that the biggest challenge is availability of roots—a concern that he has raised with FCI to address the challenge.

EIL intends to support scaling up of the OFSP puree value chain through:

- Equipment purchase and installation
- Product development
- Food safety implementation
- Technical backstopping in the production process, including the washing and steaming of OFSP roots

Magnaghi reported that EIL, as a global company offering technical support, was a private sector company dealing in puree processing in Kenya services and is not confined to specific regions.

*A concern was raised on the cost of transporting roots to Nairobi from western Kenya.* Magnaghi and Agili differed on costing. Magnaghi warned that if costs are not critically considered, it would affect supplier margins.

## **Presentation 5:** OFSP puree processing and farmer linkage—Organi Ltd

During his presentation, Bernard Otieno acknowledged that there was a great opportunity for scaling up OFSP puree as the use of the ingredient in baking was becoming increasingly popular, especially in supermarkets. He gave an example of Naivas bakery, which was planning to scale up production of specialty products across its stores.

He noted that although the puree market was evidently large, the cold chain processing model has limited the use of puree by major supermarket outlets (e.g., Tuskys, Naivas, Mathai and Choppies) with cold storage facilities. As a result, most bread consumers from rural areas are not able to access the nutritious OFSP products. In 2017 Organi Ltd expanded its product offerings to include OFSP bread for local households. This did not meet the local demand because of a limited capacity and a skewed distribution channel. Baking was later suspended in 2018 after the National Environment Management Authority imposed new packaging policies.

Otieno observed that farmers had the capacity to produce when assured of a market for their product. For instance, in 2016 Organi witnessed a glut that nearly wiped out the market. OFSP puree supply has since been inconsistent as a result of puree demand factors and seasonality. This has hurt the firm's annual sales of puree and affected bakery section. In addition, quality of roots from farmers was noted by Otieno to have really deteriorated, which affects the profit margins since most of the roots have to be thrown away.

Organi intends to increase its puree market beyond the existing supermarkets as well as expand the factory's baking wing to industrial capacity. The firm is re-introducing baked products so as to use more puree internally. To help mitigate cold storage challenges, Organi intends to reformulate puree into sweetpotato flakes, a step the firm believes will solve the logistical challenges that are limiting puree sales. With availability of funds, Organi will expand its market to include at least five more bakers, both in the urban and rural set-ups by the end of the first year of the project.

### The scaling strategy for Organi as shared by Otieno

To invest in more aggressive marketing campaigns that will include OFSP baked products in order to increase puree demand in the supermarkets:

- Profile and train new bakers on the use of OFSP puree in baking.
- Expand and upgrade the puree line, including procurement of a sweetpotato flakes processing machine and roots-washing machine.

- Reevaluate puree production costs in order to reduce the cost of puree, not only to remain competitive but also to attract new markets.
- Progressively expand the baking capacity from 300 loaves per day to 1,500 by January 2021 by procuring additional equipment. This will increase the use of puree internally from 50 kg per day to 250 kg per day (at least 1,250 kg of puree per week).

### Reactions to the presentation

*Otieno was asked about Organi's location, production size, and whether the firm had contractual agreements with farmers.*

**Response**: Organi is located in Homa Bay county, Kabondo sub-county, Othoro Market.

Otieno acknowledged that contracts were available but had not been fully implemented due to unpredictable market dynamics.

One of the participants was worried that Organi's 2019 sales were too low and that already many farmers had roots. Otieno pointed to the 2018/2019 dry spell that adversely affected yields in 2019, coupled with low farmer morale that deprived Organi of roots until July. This affected their key market.

Agili suggested that Organi review its root-sourcing strategy. He recommended linkages with cooperatives as a way of reducing sourcing constraints. He also recommended prompt payment as a way to bring farmers closer to the firm.

Otieno responded by saying that Organi is working with microfinance institutions that offer favorable credit terms in order to pay their farmers, an arrangement he said was based on Local Purchase Order (LPO) financing or invoice discounting (or both). This strategy was therefore to be implemented until Organi could secure an alternative market to bridge the gap. Unfortunately, Tuskys declined to buy puree from Organi after June 2019, following their inability to meet the supermarket's demand since the year began. This has affected the firm's payment strategy.

## **Presentation 6:** Awareness raising and advocacy—The Mediae Company SSU

Mediae was established in 1997 to help rural people improve their livelihoods. Through education, entertainment, and impact research, Mediae works with partners to provide knowledge and information that can be widely accessed, understood, and applied. The company creates interactions with commercial and development sectors as their numbers keep growing. The SSU 'edutainment' model aims to both entertain and meet the information needs of audiences. Throughout its years of operation Mediae has built big audiences through several programs. The latest is SSU, which has up to 3.5 million viewers. Others include *tembea na majira,* with 8 million viewers, and *makutano junction* (6 million viewers).


**Photo 3.** Sophie Rottmann from Mediae

CIP is partnering with SSU to create demand for clean planting material, OFSP roots, and OFSP puree. This will be done by filming implementing partners' experts demonstrating the technology/topic in homes in Kenya (SSU, Shamba Chef). The series of films will be broadcast and include partners' logos at the beginning and end of each episode. This is envisaged as a way to change and influence knowledge, attitude, and practice along the OFSP value chain.

In collaboration with CIP, the SSU program will film and air the following episodes to scale up OFSP puree utilization through the features shown in Table 4.

**Table 4.** Features shown on scaling up OFSP puree

| | **Feature 1** | **Feature 2** | **Feature 3** | **Feature 4** | **Feature 5** |
|---|---|---|---|---|---|
| **Lead topic** | Access vines + Planting | Access vines + Planting | Harvest + Post harvest handling | Harvest + Post harvest handling | Formal |
| **Subtopic** | Above; One farmer who is doing it shows a farmer who is not; Moses to advice | Expert (Moses), advices farmer on good growing practices | Clean; plough harvest to minimise spoilage; Curing process, Use crates, no washing, shelf life approx. 2-3 weeks | Clean; plough harvest; crates, no washing, shelf life approx. 2-3 weeks | Farmer sells to processors/Sweet Tunda (BNB or Organi Ltd) |

| **Feature 6** | **Feature 7** | **Feature 8** | **Feature 9** | **Feature 10** |
|---|---|---|---|---|
| Formal | Formal | Informal | Informal | Informal |
| Farmer sells to Tuskeys / Naivas / Home delish; Bread is made | Bakers using OFSP / Cook-off for formal bakers make a dish | Road side mama's selling Mandazi´s / Chapatis | Road side mama's selling Mandazi´s / Chapatis | Cook-off OFSP / make a dish |

### **Presentation 7:** Nutrition-sensitive agriculture in Kenya—Ministry of Health

The presentation was shared by Leila Odhiambo, the program manager for nutrition and dietetics under the national government of Kenya. Odhiambo spoke about the general nutrition status of the population of Kenya. The presentations showed that Kenya is experiencing the triple burden of malnutrition (Global Nutrition Report 2018) categorized as undernutrition (underweight, stunting, and wasting); micronutrient deficiencies; and increasing incidences of overweight/ obesity from unhealthy diets. Kenya's Nutrition Action Plan (2018–22) aims to accelerate and scale up efforts to help eliminate malnutrition in Kenya in line with the country's vision for 2030 as well as the Sustainable Development Goals that focus on specific achievements by 2022. Prevention, control, and management of micronutrient deficiencies had been scaled up through strengthened, routine micronutrient supplementation (vitamin A, iron and folate and micronutrient powders) for targeted groups. Vitamin A supplementation, however, is expensive and is not sustainable. The focus now is on nutrition-sensitive interventions such as OFSP roots and puree. Profiling of OFSP has already been done, and the crop's orange color is an important part of nutrition messaging. Odhiambo reported that although OFSP is mentioned as a source of vitamin A in Kenya's Nutrition Action Plan, she was concerned about how the implementing partners failed to acknowledge the government's involvement during their presentations. Odhiambo mentioned the need for the project to link up with Concern Worldwide's Lishe Bora project, which is supporting nutrient-dense products but facing challenges of nutrient analysis.

**Opportunities for RTB scaling fund with the nutrition department were highlighted below:**

- Participate in the technical working groups at national and county levels.
- Participate in the Scaling Up Nutrition Business Network.
- Link with other projects (e.g. GAIN, Marketplace for Nutritious Foods, Lishe Bora, etc.).
- Engage/ collaborate in data collection/analysis, research and innovation.
- Promote sustainability approaches through linkages with and support for government efforts.
- Integrate OFSP into government programs.
- Build capacity of farmers, processors and project staff

One implementing partner Netbiz Impact was not able to make it to the workshop however their role was briefly mentioned as working with SME to develop their business skill and help the identified enterprise develop business profiles that will enable the gain access to credit facilities and grants for expansion.

## **Session 3:** Partners' scaling 'elevator pitch'

After listening to presentations from implementing partners, members were asked to identify areas of synergy and give a three-minute 'elevator pitch' on how their organizations will collaborate with the RTB scaling project and with other implementing partners to take the OFSP value chain to scale.

### 3.1 World Food Programme (WFP)—Joyce Owigar

WFP is still new to the OFSP value chain, but they have started nutrition-sensitive programs in arid and semi-areas with OFSP as one of the crop of focus. The projects will be implemented in Isiolo and Samburu areas, where a number of farmers are planting OFSP. WFP has supported school-feeding programs for many years and OFSP is currently being viewed as one of the interventions to take to school feeding program, Owigar explained that as a humanitarian organization, WFP is moving from giving hand-outs to a more sustainable approach by supporting commercialization of nutrient-dense crops like OFSP. Partnership with the OFSP project could be an entry point to take OFSP interventions to schools and commercialization in the arid and semi-arid areas.

### 3.2 World Vision—Joseph Githinji

World Vision prides itself in working at grassroots levels. It promotes OFSP in Bomet county in Chepalungu area, where the organization has established several seed multiplication sites and is working in partnership with the county government to set up OFSP processing. The organization is in discussions concerning puree processing as an option. World Vision supports cooperatives with funds to scale up their operations, which will potentially include puree processing. It has also worked in Elegeyo Marakwet county to address malnutrition using OFSP as an entry point. Currently, there is no processing facility in the county, and World Vision sees this as an opportunity to scale up OFSP puree by investing in puree processing and marketing. Githinji identified WFP as a partner to link with for the school-feeding program. (This discussion was to be picked up and continued with the two partners.)

### 3.3 GIZ—Charles Onyango

Charles Onyango gave an overview of the Green Innovation Program, which focuses on two components: the dairy value chain and the sweetpotato value chain. In the latter, GIZ supports smallholder farmers in production and marketing of all flesh varieties of sweetpotato (i.e., white, yellow, and orange). In collaboration with KALRO, GIZ is working to produce clean planting materials for farmers; support processing and fresh-root markets in Bungoma, Kakamega, and Homa Bay counties; and train farmers on GAP. GIZ is also venturing into export markets for sweetpotato. During the meeting an opportunity to partner with EIL was identified to train the informal market to produce OFSP products like mandazi and chapatti at grassroots levels.

### 3.4 GAIN—Dorothy Mugane

In sharing a brief overview of GAIN, Mugane highlighted the Marketplace for Nutritious Foods project which focuses on supporting SMEs in the nutritious food value chain in developing profitable business models and sustainably bringing nutritious and safe foods to market. GAIN has worked with Organi Ltd and B&B private enterprises partnering with CIP to offer technical support in terms of creating a business case for OFSP bread

and puree. The project two-pronged approach supports a broad network of stakeholders with information and knowledge through the community of practice, while targeted technical and financial support is offered to promising innovative enterprises through the innovation accelerator. GAIN focuses on three strategies to create (1) demand, (2) access to nutritious products, and (3) enabling environment for SMEs. Dorothy spoke briefly about the new project on supporting biofortification in collaboration with HarvestPlus; CIP is also a partner.

### 3.5 Self Help Africa—Lawrence Isiaho

Lawrence Isiaho shared that Self Help Africa in Kenya works with smallholder farmers to move them from subsistence to commercialization through a range of projects. He believed Organi is a victim of an insufficient market since they are not able to absorb the large volumes of OFSP produced annually. Self Help Africa, through the AGRIFI Kenya Challenge Fund, is open to SMEs to apply for grants and is working to support agri-businesses through an Agriculture Financing Initiative Programme. It supports productive, adapted, and market-integrated smallholder agriculture, including a contribution to the Africa Investment Facility. Isiaho urged the private sector partners to apply for Agrify grants to support and expand their businesses.

### 3.6 CRS MENDO project—Celestine Asena

Celestina Asena shared that CRS-MWENDO has been working in western Kenya partnering with CIP in vine procurement to promote OFSP processing. Its main target is orphans and vulnerable children to address nutrition challenges through the MWENDO project. CRS helps millions of smallholder farmers worldwide recover from natural disasters and civil strife, build resilient farming systems, and grow them into agro-enterprises that engage successfully with markets. The organization's MWENDO project is implemented in Nairobi and four other counties in the country's coastal region. MWENDO is helping caregivers support children who are living with or affected by HIV and AIDS through nutrition and support to businesses for income generation. Asena expressed interest in working with EIL in the informal market to promote OFSP production and thus further its utilization. The challenge faced along the value chain was accessing clean planting materials. MWENDO is interested in working with SMEs to commercialize the OFSP crop, an area which presents an opportunity for collaboration with the RTB scaling project.

### 3.7 Agriculture and Food Authority (AFA)—John Waithaka

AFA, a government parastatal established in 2013, is charged with the regulation of all the food crops and is largely involved in the development of food policies and regulation. In the sweetpotato industry, AFA is currently involved in the development of policies and regulations concerning production and commercialization for export. It is focused on creating demand by promoting consumption of OFSP. At present, it is also working on an export strategy for sweetpotato and has identified the UK as the main market.

### 3.8 Micro Enterprises Support Programme Trust (MESPT)—Margret Miano

MESPT works along three developmental pillars: green work development, enterprise development, and value chain development through financial linkages and markets. Its products and services help to create the necessary linkages between value chain market players, and it has memorandums of understanding (MoUs) with 13 counties in Kenya. MESPT supports collection/ aggregation centers and other infrastructure, and opportunities are available in aggregation centers to bring OFSP marketing and support with GAP certification.

Engagement with counties is an opportunity since MESPT is a secretariat. The trust offers support through general loan to value chains and green financing. MESPT credit facilitation is through financial intermediaries with capacity to reach those communities that are possibly underserved.

### 3.9 Rural Livelihoods Improvement International (RULIMP)—Sammy Agili

RULIMP is an organization based in Kisumu county, where it currently works with about 600 sweetpotato farmers mostly on fresh roots markets and providing market linkages to OFSP farmers. RULIMP is supplying fresh roots to high-end supermarkets in Nairobi, like Zucchini, and is formulating a deal with the newly opened supermarkets in Kisumu. RULIMP has recently submitted a proposal to RTI for funding to work on addressing the gaps in access to market by OFSP farmers. RULIMP's major interest is flour production, which it intends to supply to institutions, especially the early childhood development (ECD) programmers.

Agili raised several issues on the need to roll out new varieties that meet the needs of both processors and fresh root consumers. He said the varieties currently planted by farmers do not meet export market due to their shape. He tasked EIL to link aggregators to the processors and provide the quality and quality the market required for them to be able to apply the strategies for meeting their demand.

# **Session 4:** Private enterprises' elevator pitch

## 4.1 Bernert Farmers—Erick Owando

Benert Farmers are located in Siaya and are currently working on sweetpotato focusing on the export market. Their business model is on the process of development to export their roots to Norway and Egypt. They already have an investor who will train them on Global GAP and food safety aspects to meet the quality requirement for export market. They are also planning to enter the local fresh roots market.

## 4.2 Kabondo Sweetpotato Marketing Co-operative Society—Tobias Muga

The cooperative is working with 3,000 registered farmers under their cooperative and already have eight collection centers. They buy 20% of the roots from farmers and the other 80% is linked to Organi Ltd, the OFSP processor. They use the roots to produce flour that they sell to a baker in Oyugis town and to Azuri Company in Nairobi. The biggest challenge they face is the lack of an adequate market for OFSP flour and roots.

## 4.3 Agrifoods Trading Group—Brighton Marienga

Agrifoods Trading Group is based in Kisumu, where they trade in white-, yellow-, and orange- fleshed sweetpotato roots. They are in the process of setting up a puree business and intend to produce the local mandazi famously known as 'KDF'.

## 4.4 Hequendo Enterprise—Michael Barraza

Hequendo Enterprise currently works with 1,800 farmers in Bungoma. They have 650 farmers with OFSP roots ready and for whom they are seeking markets. The firm's main market has been Safe Produce Company in Nairobi. Barraza stated that each of the 650 farmers has approximately a quarter of an acre, with a total of 162 acres of land. This translates to roughly 400 tons of roots available but without readymade access to a market.

## 4.5 Food and Nutritional Evaluation Laboratory (FANEL)—Lucy Mwaura

FANEL works with SMEs by offering technical support on food safety areas. The lab determines proximate composition of OFSP roots and products. Lucy shared with participants on the planned food safety training and urged participants to provide details of who to participate.

# **Session 5:** group discussions—Identifications of gaps and areas of collaboration

## 5.1 Group 1: Seed system gaps

- Lack of irrigation support for production of vines during dry seasons
- Recycling of planting material, which has resulted in low yields
- High cost of primary planting material from KEPHIS, KALRO, and commercial vine multipliers
- Seed companies are unwilling to venture into vines as a business (business development training of sweetpotato producers)
- Lack of timely access to planting material (rains, prolonged dry spells)
- Lack of planting material of varieties suitable for processing
- Unfavorable cultural norms (traditional practices and beliefs) around OFSP production

**Root production**

- Lack of suitable varieties for processing
- Poor knowledge of GAP (extensions, crop rotation)
- Lack of soil testing
- Production gluts  after the rains and prolonged period of not roots
- Poor pre- and postharvest handling (damage and loss/production of low-quality produce)

## 5.2 Group 2: Processing—food safety, puree technology

The following gaps were identified during the discussion:

- Food safety and nutrition labeling analysis of the products is a challenge for SMEs. FANEL can help to address these challenges.
- Organi needs to upgrade its puree processing equipment to increase efficiency (e.g., roots-washing machine to eliminate manual washing).
- EIL will work with Organi to scale production as well as other aspects of food safety.
- Marketing of fresh/finished OFSP roots is still a big challenge. World Vision will provide linkages to access markets.
- World Vision needs technical overview support in processing of OFSP products; EIL to build capacity as needed.
- FANEL will help World Vision with aspects of food safety and SMEs acquire food safety certification.

**Photo 4.** Group 2 participants.

### 5.3 Group 3: Advocacy—access to credit/grants, business model, business plan, marketing OFSP awareness and creation

Five gaps identified:

- Low awareness of OFSP (demand creation through multimedia like radio, TV)
- General negative perception of OFSP
- Limited value addition and puree processing
- Taxation and pricing of processing of OFSP products
- Limited knowledge in utilization of OFSP

## **Session 6:** Diagnostic survey

After group discussion, participants completed a diagnostic survey; fifteen surveys were completed that day. The survey results pointed to a number of challenges. Each survey took 30 minutes to complete; some questions were repetitive, while others were difficult to understand without clarification.

## Next steps

It was agreed that a bilateral meeting be held for the organizations to develop MoUs to kick off partnership engagements. Implementing partners were requested to update their work plans to include the new partnerships identified during the meeting (see Table 5).

It was also agreed that the team to form the sweetpotato platform for networking and collaboration with. Participants mentioned other firms, cooperatives or entities along the sweetpotato value chain through diagnostic survey and shared contact details of other partners to loop them into this discussion. One outcome of the workshop was the establishment of a stakeholders' platform for the coordination of production and commercialization in the sweetpotato value chain in Kenya.

Overall participant appreciated the scaling readiness effort to bring together the value chain actors and for gaining new networks. One Githinji mentioned the challenges they organization was facing on getting quality good varieties quality vines when CIP seemed to have a well-established seed system. Private enterprises were encouraged to link up with GAIN, MESTP, RTI and SHA to send in proposal for business grants.

As there was no other business, the meeting adjourned at 4:20pm.

**Table 5.** RTB Scaling Fund OFSP puree project work plan

| Output Code | Activity | 2019/2020 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | June | July | Aug | Sep | Who? |
| Farmers accessing high-quality OFSP vines | Select local multipliers and strengthen their capacity in selected OFSP varieties. | | | | | | | | | | | | | FCI, Organi |
| Farmers trained on GAP | • Select and train farmer groups and associations in high-potential areas for year-round production of preferred processing varieties.<br>• Extension services support OFSP farmers produce, harvest, and sell quality OFSP roots for marketing to processors.<br>• Organize OFSP farmers into outgrower networks linked to processors. | | | | | | | | | | | | | Ministry of Agriculture (MoA), FCI, CIP |
| Partnership agreements | • Identify scaling partners.<br>• Identify commercial partners for puree processing or processing for scaling up. | | | | | | | | | | | | | CIP |
| Market assessment reports | Conduct market assessments for OFSP puree and puree products. | | | | | | | | | | | | | |
| Supply and production plan for puree and puree products | Identify equipment and training on supply chain needs for the target products. | | | | | | | | | | | | | EIL, CIP |
| Advocacy tools for stakeholder outreach | Communication expert engages with the public through mass media, social media, and literature for key stakeholders. | | | | | | | | | | | | | RTI, GAIN, Mediae |
| Updated consumer and market reports | Conduct consumer evaluation and market assessments for OFSP and OFSP puree products. | | | | | | | | | | | | | FCI, EIL |
| Nutrition messaging and advocacy and social marketing strategy | • Support regular information exchange between organizations, farmer associations, and other stakeholders on OFSP varieties, GAP, and puree technology.<br>• Develop adverts and content for mass media, social media, and direct contacts.<br>• Hold cooking demos in stores and in local trade centers, markets for OFSP puree. | | | | | | | | | | | | | GAIN, Ministry of Health (MoH), RTI, Mediae, Concern Worldwide |

| Output Code | Activity | 2019/2020 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | June | July | Aug | Sep | Who? |
| Scaling protocols | • Hold consultative workshop for scaling tools and monitoring, learning, and evaluation.<br>• Hold workshop on the writing of MPS scaling case studies. | | | | | | | | | | | | | CIP |
| Business development model | • Hold 3 workshops or clinics in each country with informal sector and SMEs on OFSP puree business and supply chain management. | | | | | | | | | | | | | Netbiz Impact, MESPT, GAIN |
| Protocols for OFSP puree processing | • Validate OFSP puree recipes, equipment, and production facilities from pilot production to full scale.<br>• Develop protocols customized by location, farming systems and business environment. | | | | | | | | | | | | | EIL, FANEL |
| Technology demos on puree processing | • Conduct 4 workshops in each country, showcasing demand, recipes, products, equipment, and production sales for OFSP puree and products.<br>• Develop OFSP puree processing manuals for public dissemination.<br>• Make 1 testimonial and technical visit by US-based sweetpotato companies to each country.<br>• Participate in agribusiness forums and trade fairs. | | | | | | | | | | | | | EIL, CIP |
| Supply and production plan for puree and bread developed | • Promote OFSP farmer coordination and linkages with OFSP puree producers.<br>• Secure collaborative agreements between the three parties. (Farmers, Processors and Bakers) | | | | | | | | | | | | | FCI, processors |

# Annex

## Annex 1: Program schedule

| 30/10/2019<br>Time | Activity | Facilitator<br>*Rapporteur Bethwel Lagat* |
|---|---|---|
| 8:30–9:00 | Registration | Keziah Githae |
| 9:00–9:30 | Introduction of stakeholders | Rose Chesoli |
| 9:30–9:45 | Overview of RTB scaling fund OFSP puree project | George Abong |
| 9:45–10:00 | Progress on scaling readiness | Rose Chesoli |
| 10:15–10:30 | Tea break | |
| | Presentation of work plans by implementing partners | Daniel Mbogo |
| 10:30–10:45 | FCI: Farmer aggregation market and linkage | Antony Masinde |
| 10:45–11:00 | EIL: Puree technology and creating business development | Antonio Magnaghi |
| 11:00–11:15 | Organi Ltd: OFSP puree processing and farmer linkage | Bernard Otieno |
| 11:15–11:30 | The Mediae Company SSU: Awareness creation and advocacy | Sophie Rottman |
| 11:30–11:45 | Plenary session on presentations | Daniel Mbogo |
| 11:45–12:15 | Partners' elevator pitch<br>Potato value chain,<br>WFP, World Vision, GIZ, GAIN, CRS, Self Help Africa, MESPT, AFA, | Rose Chesoli |
| 12:15–12:30 | Private enterprises' elevator pitch<br>Barnet Farms<br>Kabondo Sweetpotato Marketing Co-operative Society<br>AgriFoods Trading Group<br>Hequendo Enterprise<br>FANEL | Bethwel Lagat |
| 12:30–1:00 | Agri-nutrition in Kenya—The big 4 agenda<br>MoA: Irungu Njoroge<br>MoH: Leila Akinyi | George Abong |
| 1:00–1:45 | **Lunch break** | |
| 1:45–2:45 | Group discussions: Identification of gaps and areas of collaboration<br>Planting material: Seed system<br>Root production<br>Processing: Food safety, puree technology | |

| | | |
|---|---|---|
| | Advocacy: Access to credit/grants, business model, business plan, marketing OFSP awareness and creation | |
| 2:45–3:15 | Plenary session: Feedback from each group | Lucy Mwaura |
| 3:15–3:30 | Diagnostic assessment | Rose Chesoli/Daniel Mbogo/Lucy Mwaura/Bethwel Lagat |
| 3:30–3:10 | Presentation of updated work plans | George Abong |
| 3:10–3:20 | Closing remarks | Rose Chesoli |
| | 4 o'clock tea | |
| | **End of workshop and departure** | |

## Annex 2

| Name | Designation | Organization | Area/ location | Area of specialization | Email | Contact |
|---|---|---|---|---|---|---|
| Barbra Nelima | Nutritionist | MoH | Nairobi | Healthy diets/nutrition | nelima.barbra@gmail.com | 0705864355 |
| Celestina Asena | Livelihood & economic strengthening specialist | CRS-Mwendo | Kisumu | Nutrition and Income for vulnerable HHS | celestina.asena@crs.org | 0780923625 |
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| George Abong | Scaling champion | University of Nairobi | NBI | Food scientist | georkoyo@yahoo.com | 0700073386 |
| Brighton Marienga | BDS | AgriFoods | Kisumu | Food processing | brightonmarienga@gmail.com | 0720171025 |
| Sophie Rottamann | Mediae | Mediae | Nairobi | Media production | sophie@mediae.org | 0785788155 |
| Joseph N. Githinji | National technical specialist | World Vision Kenya | Nairobi | Agriculture and food security | josephndegwa@wvi.org | 0720845361 |
| Antonio Magnaghi | CEO | EIL | Nairobi | Application and processing | antonio@euroingredients.net | 0721782767 |
| Bernard Otieno | Manager | Organi Ltd | Kabondo | Processing | benardotieno12@gmail.com | 0700158428 |
| Tobias Muga | | KSPMCS | Kabondo | Aggregation | Tobias.muga2@gmail.com | 0724169624 |
| Erick O Owando | | FKF/Barrinate | Siaya | Agronomist | owandoerick@gmail.com | 0710306739 |

| Name | Designation | Organization | Area/ location | Area of specialization | Email | Contact |
|---|---|---|---|---|---|---|
| Antony Masinde | Senior technical specialist-enterprise development & agri-innovations | FCI | Nairobi | Markets | antony.masinde@farmconcern.org | 0721617010 |
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| Lawrence Isiaho | PM | Self Help Africa | Nairobi | Agriculture | lawrence.isiaho@selfhelpafrica.org | 0725002424 |
| Margret Miano | Value chain & enterprise development | MESPT | Lower Eastern | Value chain | MMiano@mespt.org | 0733855190 |
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| Rose Chesoli | Scaling monitor | CIP | Nairobi | Program delivery | R.Chesoli@cgiar.org | 0729791934 |

## Link to photos

https://drive.google.com/drive/folders/1kiooQ3fZNgzepFDX85yWbUV-mmcDz8LH?usp=sharing

## Link to presentation

https://drive.google.com/drive/folders/1Vo__CsgACDfUpEwnfyvv6cdZcEkp5Dtk?usp=sharing

## Shamba Shape Up video link

https://drive.google.com/file/d/1nrnnps4Y80kqkJz_jWeP4_4rOtjYwKg6/view?usp=sharing

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